

Analysing study on the variation of the ionospheric total electron contents at the Sumatra earthquake in 2004

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Near field and far field coseismic perturbations of ionospheric total electron content (TEC) caused by direct acoustic wave from focal regions and surface wave, can be observed with Global Positioning System (GPS). They appear at 10-15 minutes after the displacement of earth's surface.

We analyzed the GPS data which were recorded at four stations in Indonesia and six GEONET ones to research ionospheric disturbance associated with the 2004 December 26 Great Sumatra-Andaman earthquake. We could found the ionospheric disturbances in SAMP (IGS) and Nishinomiya (GEONET) data.

The earth's surface displacement which caused their TEC disturbances were examined by comparing the time of the displacements and that of TEC disturbances. The disturbance which was observed by SAMP data was estimated to be caused by the displacement of the northern part of the focal fault of the earthquake, and those by Nishinomiya data must be caused by the surface wave with the period of about 240 sec.